

POLYMER PROCESSING

Department of Chemical Engineering
CHEM ENG 4X3/6X3

COURSE OUTLINE 2022/2023

INSTRUCTOR: Dr. M. Thompson JHE A214/H Ext. 23213 mthomps@mcmaster.ca

TEACHING ASSISTANTS: Jierui Jian (jianj5@mcmaster.ca)

SCHEDULE: Lectures - Monday, Thursday 12:30-1:20, Tuesday 1:30-2:20 pm. (in-person)
ABB 163 (tentatively)

Students who prefer asynchronous learning will have access to previously recorded lectures from 2020/2021 as well as previously recorded videos on all in-class problems. There will be no synchronous portion of the lectures provided virtually.

COURSE OBJECTIVES: This course will introduce the student to the basic principles of polymer processing, stressing the development of models, which have aided engineers in understanding the fundamental aspect of this field. Efforts will focus on extending transport phenomena to the specific behavior of polymers and acquaint students with the machinery typically of the field of polymer processing.

Essential requirements:

Based on the nature of the evaluations in this course, all testing must be done in-person. The evaluations in this course have been developed to see if the student understands the concepts taught by testing with familiar problems rather than asking the student to extend the concepts to never before seen problems. In other words, students are asked to demonstrate in the mid-terms or final exam that they now understand the concepts of the course by revisiting selected questions previously given as assignments with altered values for an otherwise identically worded problem. Since students coming into a test have already seen the problems in the test, there can be no fair evaluation of understanding if a student has access to their assignment materials during the test.

RESOURCES: Required courseware – *ChE 4X03/6X03 – Introduction to Plastics Processing*, by J. Vlachopoulos. Available in AVENUE under the course tile.

CALCULATORS: McMaster Standard Calculator may be used for the mid-term and final exam.

WEBSITE: Only an electronic version of the course outline exist, though only the one in AVENUE will be up to date and relevant. Any version on the department website is not up-to-date and

present only to let students prepare for the course before it is given. All content for the course, including the outline, will be found on the course's site on AVENUE. Recordings are found on the course's MS Streams channel.

GRADING: The following table** shows the contribution of components to the final grade,

4X3	Assignments (5)	10%
	Midterm*	40%
	Final Examination (in-person)***	50%
6X3	Assignments (5)	10%
	Midterm*	30%
	Project	15%
	Final Examination (in-person)***	45%

***Note: No make-up mid-terms, mark will be assigned to the final exam if missed. Midterm 1 – February 13 (worth 16%), Midterm 2 – March 20 (worth 24%) during class time. Testing centre – TBA. If university is online at the time, then the midterm will be set in AVNEUE (but only if the university is officially closed to in-person testing)**

** The instructor reserves the right to alter the evaluation scheme if necessary. Any changes will be discussed with the class during lectures, and documented in the AVENUE site.

*** In the event that the university declares final exams are online, exam will be set in AVENUE.

The final grade percentage will be converted to letter grades using the Registrar's recommended procedure. Adjustments up or down to the final grades may be done at the discretion of the instructor.

NOTES:

Email – Each class member is expected to have a McMaster e-mail address with available free space to receive communications from the instructor and are expected to read their emails daily. Occasionally, important information to the class will be transmitted by e-mail. Hotmail, Netscape, and other e-mail services are often blocked by our servers due to spam/virus filters, and the student will miss out on important information regarding their class – do not forward your McMaster e-mail to these accounts, nor attempt to send me e-mail which you consider vital from these types of accounts. Those who do not have a McMaster e-mail account should register before the second class.

My e-mail address is mthomps@mcmaster.ca. I will respond to e-mails sent on the weekend on the first workday back. E-mail is often the most convenient manner of corresponding unless the need is urgent. Do NOT attempt to contact the instructor from AVENUE. It does not allow replies and the e-mail system on AVENUE is not watched by the instructor.

McMaster Student Absence Form (MSAF) –In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate

Calendar “Requests for Relief for Missed Academic Term Work”. All missed work requires a student to submit a MSAF else receive a zero grade. With an MSAF the work is exempt and the value of the missed work is added to the value of the final exam. This includes the mid-terms.

Students are reminded that it is the policy of the Engineering faculty that students are responsible to follow up with the instructor directly once filing an MSAF, and ensure that the MSAF was received by the instructor. Often when the student has not received a reply it is due to the fact that an incorrect email address was given to the MSAF system for the instructor.

Lectures – The lectures are intended to be in-person and expand upon key points from the courseware and assignments, allowing discussion of these concepts. However, there will not be time to cover all topics given in the courseware in class yet the student **remains responsible to know all material in the courseware** for tests and exams.

Midterm/Final Exam – Students will be allowed to bring in one (1) 8.5” x 11” cribsheet with hand-written notes on **both sides** and an Engineering-approved calculator into the midterm and two (2) 8.5” x 11” cribsheets with hand-written notes on **both sides** into the final examination. **No other references will be allowed. Cribsheet can only contain definitions – no equations and no content from the assignments*** or notes may be included. Equations will be supplied by the instructor in the test sheet itself (though a preview copy is included in AVENUE so that students can familiarize themselves with it before the test).

Example of a definition as it may show on the cribsheet:

Crystal melting temperature (Tm) – the peak temperature during melting of the polymer crystals whereby all small crystals have melted.

Cribsheets will be checked* by the instructor during the mid-term or final exam.

** the instructor is looking for the inappropriate inclusion of equations or any description (written or graphical) instructing the student to use a specific sequence of equations to answer an assignment problem or any old exam/midterm problems (current year or previous years). Ask the instructor well before the midterm or exam if there are concerns.*

Midterms not written in pen will not be considered for re-marking. Any evidence of copying or use of unauthorized aids (including cell phones, PDA, blackberry, etc.) will be treated as a case of academic dishonesty and referred to the Academic Integrity Officer. For more examples/definition of academic dishonesty, see the discussion below. **Special note:** All wireless devices (cell phone, etc.) are to be turned off for midterm and the final exam – the instructor may impose a 10% penalty on anyone disrupting the examination.

Snow Day/COVID Lockdown Policy – In the event of campus closure, a scheduled midterm will be given once in-person studies resumes. If the campus remains closed for more than two weeks past a scheduled midterm, it will be cancelled and the value of the midterm will be added to the final exam. In the event of a campus closure, assignments will be accepted as PDFs and submitted to the TA.

Homework – Homework will be due by the start of the class on the day it is due and **must be in paper form** (no emailed PDF or otherwise virtual modes will be accepted). *It is really hard for TAs to mark virtual homework and show where the solution provided by the student might need improving.* Assignments can alternatively be submitted to the drop-box in front of JHE/374 – this box is emptied daily at 4:00 pm. Homework assignments **will not be accepted after 4:00 pm** on the day they are due nor any day thereafter. Excused lateness must be worked out with the professor **before** the assignment is due, else you must present suitable documentation to the Associate Dean’s office and have an MSAF filled out. Blatant copying or cloning of assignments will be treated as academic dishonesty and dealt with in a formal manner. You are encouraged to work on the problems with your colleagues and to seek the assistance of the TAs or professor if necessary, but direct copying of the solutions from another student or any other source is **not acceptable**.

Typically homework will be due – Thursday

All homework must be done on 8.5 x 11" paper. The work must be neat with intermediate calculations and assumptions shown (**Note:** often the final answer has little or no value to the mark for the question). Failing to hand in neat, legible assignments, the TA has the right to remove 10% off of the final mark of the assignment. Consistent units must be shown at each step of your calculations and use diagrams as part of your solution whenever possible. The final answer with units must be clearly identified.

- Everyone working alone must submit their own assignment with **name and student number must be on the top of each page**.
- Students are encouraged to work with others but MUST state who these people were on top of the front page of their assignment, just under their own name. All declaration must be made before an assignment is handed in – we will not accept a declaration after the assignment has been noticed to be copying someone else’s. Making this declaration does not mean that assignments may be cloned or photocopied. **Any assignments that are deemed to be identical in solution yet the students were not declared as having worked together will be treated as a case of academic dishonesty.**

Assignments done in pencil will not be re-marked (which also applies to exams or tests).

Report (6X03 ONLY) – Graduate students must complete a report on a topic of interest from the course. The work will provide a critical review of the literature in the chosen area. Students must confirm the topic with the instructor before starting to write. The report is a maximum of 20 pages long (including figures and tables but not the cover page or table of contents), double-spaced using Times New Roman 12-point font. The margins on a 8 ½" x 11" page are to be 1" on all sides. Headings are to be bold but remain in 12-point font. The title can be in 14-point font. Student’s name and ID, and the title of the report are to be stated on the cover page only. References should be indicated in the textbody as a numeral, ex. [1], and listed at the end of the report under their own section in the order they appeared in the textbody. All references should adhere to the style for the Journal ‘Polymer Engineering and Science’.

Reports are to be submitted in a Microsoft Word compatible format, e-mailed directly to the instructor. Reports are due the last day of lectures by 12:00 noon.

Recording devices in lecture – No video recording or image taking devices are allowed to be used in the lecture hall and examination room without written permission by the instructor. This includes technologies with multiple purposes, such as cell phones, tablets, or Google glass. Violators will be removed from the class and may possibly be banned from returning.

Cell Phones and Laptops/Tablets – Phones are not allowed to be used in lectures or tutorials without permission by the instructor. These devices are disruptive to the class, so students are required to leave the room if they must be used. Refer to further policies above in regards to tests and exams. Laptops and tablets are permitted in the class for the sole purpose to take notes. Any other use of a laptop or tablet that is disruptive to the class, particularly the students around said person, or is contravening the recording policy above will be asked to turn off the device or required to leave the class room.

POLICY REMINDERS

ACADEMIC INTEGRITY

*You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.***

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

AUTHENTICITY/PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/ software during tests or exams. This software may be required to be installed before the test/exam begins.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, whether in person or online.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University’s Academic Accommodation of Students with Disabilities policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work”.

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

*Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar’s Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.*

COPYRIGHT AND RECORDING

*Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors. The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.*

EXTREME CIRCUMSTANCES

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes. Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.